CLASS 140, WIREWORKING

SECTION I - CLASS DEFINITION

This class definition and Notes are divided into the following sections:

Combined Wireworking; Making Articles From Wire; Applying Wire; Assembling and Uniting Wire; Cutting Wire; Shaping Wire; Handling Wire; Making Wire.

GENERAL STATEMENT OF CLASS SUBJECT MATTER

(1) This is the generic class of:

Assembling and uniting, shaping and/or deforming wire.

Assembling and uniting one or more lengths of wire with other material.

Assembling and uniting plural lengths of wire.

Shaping or deforming lengths of wire by twisting, bending, kinking and looping.

Wireworking apparatus, i.e., machines and implements.

Patents for processes are classifiable along with the apparatus in all subclasses in this class where the participle form is used, e.g., subclass 93 “applying wire”. However, subclasses not so limited, e.g., subclass 1 “combined machines” have no process patents therein.

(2) Because certain elongated or attenuated elements, not meeting the definition of a wire, can be both handled and worked like wire, such working of such elements is included in this class (140). For such apparatus combined with nonwireworking apparatus, see Miscellaenous Notes, below.

COMBINED WIREWORKING

Note. Mere transient wireworking, solely for the purpose of mounting or supporting the wire during nonwireworking (and after which the wire is substantially restored to its initial condition), combined with the nonwireworking is classified with the nonwireworking, the transient working not being considered wireworking for this class. (See References to This Class, and References to Other Classes, below.)

MAKING ARTICLES FROM WIRE

(1) Note. The making of textile-like fabrics from wire is classified both in this class (140) and in various textile classes. When the process of making includes a wireworking operation, classification is generally in this class (140), where only textile-like operations are involved, classification is generally in the various textile classes (See References to This Class, and References to Other Classes, below.)

(2) Note. The winding or wire on forms or frames (i.e., as a template) is found in this class (140), when the article made does not include the template (or core) as a part thereof. The making of an electric lamp or electric space discharge device electrode, whether or not the core remains with the wound material as a part of the electrode, will be classified elsewhere in this class. Other winding of wire will be found in the class for Winding, Tensioning, or Guiding (See References to This Class, and References to Other Classes, below.)

APPLYING WIRE

For apparatus and processes for applying wire and for miscellaneous wireworking implements, see References to This Class, below. Also see References to Other Classes, below.

ASSEMBLING AND UNITING WIRE

Uniting wires by soldering, welding and brazing will be found in this class (140), when peculiarly related to wireworking. The class of Metal Fusion Bonding is generic to bonding of metal by a metallurgical bond and includes welding, brazing and soldering, except that electric bonding apparatus and methods will be found in the class of Electric Heating, (See References to Other Classes, below.)

CUTTING WIRE

See References to Other Classes, below, for specific class references for cutting wire.

SHAPING WIRE

Forging or swaging of wire is classified in Class 72, Metal Deforming. Plastic deformation of metal wire and wire-like material will be found in both this class (140) and Class 72, which provides residually for any plastic metal-working operation, such as straightening, corrugating, stretching, coiling, drawing, rolling, etc., which does not

involve assembly. Appropriate subclasses in Class 72 must therefore be investigated in connection with any plastic metal-shaping operation or apparatus. For instance, subclass 302 provides for linearly stretching a workpiece between two end clamps, and subclass 138 provides for a method of or an apparatus for deflectingly deforming metal into a conical spring element.

Shaping wire by working it (other than by cutting) will also be found in certain functional or art classes; see the "SEARCH CLASS" notes below.

Twisting of wire will be found in this class, subclass 149, and in Class 72; see the paragraph on forging or swaging of wire in this section, above. For intertwisting of wire, see sections on Making Articles from Wire and Assembling and Uniting Wire.

HANDLING WIRE

For winding of wire see (2) Note in Making Articles from Wire, above. Otherwise, see Refernces to Other Classes below.

MAKING WIRE

The making of wire is not in Class 140. See References to Other Classes, below.

MISCELLANEOUS NOTES

Certain subclasses in this class (140) have subject matter which is also classified in other main classes. Whether such subject matter constitutes wireworking for this class, so that such subject matter combined with nonwire-working apparatus will be classified in this class (140), in the subclass for Combined Machines, depends upon the status of the art. See the sections above for Making Articles from Wire, Assembling and Uniting Wire, and Shaping Wire.

For wire stock, see References to Other Classes, below, the class of Stock Material or Miscellaneous Articles.

SECTION II - SUBCLASS REFERENCES TO THE CURRENT CLASS

SEE OR SEARCH THIS CLASS, SUBCLASS:

1, and see Miscellaneous Notes, above.

1, for wireworking apparatus combined with nonwireworking apparatus.

3+, for processes and apparatus for manufacturing fabrics by wireworking operations, and see Making Articles From Wire, (1) Note, above.

71+, and see the Notes thereto for processes and apparatus for manufacturing articles. (Making Articles From Wire).

71.5, for making an electric lamp or electric space discharge device electrode, whether or not the core remains with the wound material as a part of the electrode. (Making Articles From Wire).

92.1, for winding or wire on forms or frames (i.e., as a template) when the article made does not include the template (or core) as a part thereof, (see (2) Note, above, Making Articles From Wire).

93, for apparatus and processes for applying wire. (Applying Wire)

111+, for joining wire, and see Miscellaneous Notes, below. (Assembling and Uniting Wire)

123, for miscellaneous wireworking implements. (Applying Wire)

92.1+, and 117+, for coiling of wire for joining and subclass 124 for an implement therefor. (Shaping Wire)

123.5, for an implement for stretching wire. (Shaping Wire)

139+, and 147, for straightening of wire.(Shaping Wire)

149, for twisting of wire, and see the note in Shaping Wire, above.

SECTION III - REFERENCES TO OTHER CLASSES

SEE OR SEARCH CLASS:

29, Metal Working, subclasses 592+ for wireworking processes combined with nonwireworking processes. (Combined Wireworking)

29, Metal Working, subclasses 4+ and 10. (Assembling and Uniting Wire)

29, Metal Working, subclasses 33+ for apparatus for making wire by combining two or more metal working steps separately classified. (Making Wire)

29, Metal Working, subclasses 700+ and 400.1+, and see the Notes thereto for processes and apparatus of assembly. See also subclasses 432+ for a method of driving a wire staple into work either to assemble the staple to the work or to join two workpieces. (Making Articles From Wire)

30, Cutlery, and see the Notes thereto for cutting implements, per se adapted for cutting wire. (Cutting Wire)

57, Textiles: Spinning, Twisting, and Twining, for twisting of wire by a textile-like process, especially for the making of wire rope, particularly subclass 9 and 311 for wire preforming or shaping prior to twisting into rope form, and subclass 362 for wire rope making methods involving twisting, and see (10) Note, above. Making Articles From Wire.

59, Chain, Staple, and Horseshoe Making, subclasses 1+ for chain making, and subclasses 71+ for staple making. (Making Articles From Wire)

72, Metal Deforming, appropriate subclasses for any plastic metal-shaping operation not involving assembly, and see the note in Shaping Wire, above for twisting of wire.

72, Metal Deforming, appropriate subclasses for making wire by plastically reshaping a metal work piece. See subclasses 199+ for rolling, 253.1+ for extruding, and 274+ for drawing.(Making Wire)

72, Metal Deforming, appropriate subclasses for a method of or an apparatus for plastically shaping metal and including a step of or means for handling or guiding the work or product. (Handling Wire)

75, Specialized Metallurigical Processes, Compositions for use Therein, Consolidated Metal Powder Compositions, and Loose Metal Particulate Mixtures, subclasses 200+ for making wire by powder metallurgy.(Making Wire)

81, Tools, appropriate subclasses for special hand tools for applying wire. (Applying Wire)

82, Turning, and see the Notes thereto for turning wire. (Cutting Wire)

83, Cutting, appropriate subclasses for cutting wire or other strand material. (Cutting Wire)

87, Textiles: Braiding, Netting, and Lace Making, appropriate subclasses for braiding of wire by a textile-like process. See Making Articles From Wire, (1) Note, above.

100, Presses, subclasses 1+ for binding by means of wire. (Applying Wire)

139, Textiles: Weaving, appropriate subclasses for weaving of wire generally by a textile-like process. See Making Articles From Wire, (1) Note, above.

148, Metal Treatment, appropriate subclasses for processes of metal wireworking in combination with a significant heat treatment to modify or maintain the internal physical property (i.e., microstructure) or chemical property of the metal. See the Class 148 definition to determine what constitutes significant heat treatment. (Combined Wireworking)

156, Adhesive Bonding and Miscellaneous Chemical Manufacture, appropriate subclasses for apparatus and method for laminating in general and see especially subclasses 166+ and 433+ for uniting indefinite length strands. See also subclasses 47+ as the generic home for processes of making indefinite length conductors not elsewhere provided for. (Assembling and Uniting Wire)

164, Metal Founding, subclasses 82+ for processes of making running or indefinite length products by continuous metal casting and subclass 423 for apparatus for casting wire.(Making Wire)

205, Electrolysis: Processes, Compositions Used Therein, and Methods of Preparing the Compositions, subclass 76 for electroforming of wire.(Making Wire)

219, Electric Heating, subclass 605 and 50+. Note especially indented subclasses 51+, 56+ and 78.01+. (Assembling and Uniting Wire)

226, Advancing Material of Indeterminate Length, appropriate subclasses for methods of, and apparatus for, feeding material without utilizing the leading or trailing ends to effect movement of the material. (Handling Wire)

227, Elongated-Member-Driving Apparatus, subclasses 82+ for combined apparatus for making and applying a member, e.g., nail. (Making Articles From Wire)

227, Elongated-Member-Driving Apparatus, appropriate subclasses for apparatus for applying a member, e.g., staple, to work. (Applying Wire)

228, Metal Fusion Bonding, the generic class of bonding of metal by a metallurgical bond and includings welding, brazing and soldering, (Assembling and Uniting Wire)

242, Winding, Tensioning, or Guiding, subclasses 430+ for making a composite article in which an elongated material is permanently wound onto a core. (Shaping Wire)

242, Winding, Tensioning, or Guiding, particularly subclasses 430+, and see Making Articles From Wire, (2) Note, above.

242, Winding, Tensioning, or Guiding, subclasses 360+, 430+, and 470+ for wire winding or loop forming for a storage coil. (Handling Wire)

264, Plastic and Nonmetallic Article Shaping or Treating: Processes, for processes, within the class definition, for molding or shaping plastic substances. For forming indefinite length fila-

ment like articles which may be electrical conductors see subclasses 171.1+, especially subclasses 171.26+, and for other electrical devices, see subclasses 29.1+ and 104+, in particular.(Making Wire)

254, Implements or Apparatus for Applying Pushing or Pulling Force, subclasses 134.3+ for wire or strand placing. (Applying Wire)

408, Cutting by Use of Rotating Axially Moving Tool, for the cutting of wire by a tool that twines about an axis and moves along that axis toward a workpiece with no additional motion during operation. (Cutting Wire)

409, Gear Cutting, Milling, or Planing, for milling or planing of wire. (Cutting Wire)

425, Plastic Article or Earthenware Shaping or Treating: Apparatus, appropriate subclasses especially subclasses 67+ for plastic filament former comprising an immersed shaping orifice discharging directly into a liquid bath, and subclass 461 for a filament spinning nozzle, per se; see the search notes thereunder. (Making Wire)

451, Abrading, for grinding wire. (Cutting Wire)

470, Threaded, Headed Fastener, or Washer Making: Process and Apparatus appropriate subclasses for making and/or heading nails, screws and bolts by forging or swaging. (Shaping Wire)

470, Threaded, Headed Fastener, or Washer Making: Process and Apparatus subclasses 121+ for making wire nails. (Making Articles From Wire)

470, Threaded, Headed Fastener, or Washer Making: Process and Apparatus, subclasses 8+ for methods of threading wire and 57+ for machines for threading wire except as provided for in Class 408. (Cutting Wire)

470, Threaded, Headed Fastener, or Washer Making: Process and Apparatus, subclasses 164+ and the notes thereto for machines for feeding discrete lengths of wire. (Handling Wire)

483, Tool Changing, generally for a process or apparatus including a tool transfer means combined with a tool support or storage means. (Combined Wireworking)

SECTION IV - GLOSSARY

The definitions of terms in the class definitions of Class 29, Metal Working, apply in this class unless otherwise noted.

WIRE

A wire (for the purpose of this class (140), is an elongated or attenuated metal or metal-based material, wherein all the diameters of the cross-sectional area taken at right angles to its length are of substantially the same dimension, and the cross-sectional area is small enough to allow substantial flexibility or resiliency and permit bending or flexing without substantial metal flow. A wire may be stranded, cored, coated or covered.

WIREWORKING

The term wireworking includes the shaping and deforming of wire and/or the assembly and uniting of wire with wire or nonwire material by twisting, bending, kinking, looping, etc.

SUBCLASSES

1 Inventions in the working of wire in which other features not specific to wire-working are claimed in combination therewith or such inventions, as do not come within the terms of the subclasses hereinafter defined because of the inclusion of elements, combinations, or features not in themselves classifiable in such subclasses, but usually in some other class. Also inventions in wireworking or in elements of combinations specific to this class in combination with features or means specific to metal casting, swaging, welding, metal-rolling, nailing, stapling, painting, etc., of wire, or at the joint between a wire and a nonwire since in these instances the class of WireWorking is made superior.

SEE OR SEARCH CLASS:

29, Metal Working, subclasses 33+ and see the Notes thereto, for combined machines, and subclasses 592+ and see the Notes thereto, for combined methods including a step of wireworking, and see Miscellaneous Notes to the class definition of this class (140).

483, Tool Changing, subclasses 16+ for a machine tool combined with a tool transfer means.

2 Miscellaneous inventions in wire-working not classifiable in any of the other subclasses of this class.

SEE OR SEARCH CLASS:

29, Metal Working, subclasses 90.01+ and 451, Abrading, for a device for burnishing or burnishing wire.

205, Electrolysis: Processes, Compositions Used Therein, and Methods of Preparing the Compositions, subclass 76, 77, and 138 for electrolytic methods of producing wires.

3 Miscellaneous fabric-making inventions not classifiable in the subclasses hereunder. Wire-fabric making devices classifiable in this class are divided into two main groups, including, respectively, looms or stationary machines and portable or field machines. Each of these groups is redivided into other groups, including, respectively, devices for making a mesh fabric in which continuous wire or wires are interwoven or united with the warp wires and devices in which the completed fabric shows separate cross wires or stays. Devices of the latter type are classifiable under the stay-applying group defined below.

(1) Note. Inventions in wire-fabric making classifiable in this class are characterized by working in the wires by twisting, coiling, or by some bending operation which is not characteristic or usual in the ordinary weaving machines that operate upon cotton, wool, silk, etc.

SEE OR SEARCH CLASS:

29, Metal Working, subclasses 700+ for assembly apparatus and 428 for methods of assembly not elsewhere classified, e.g., subclass 243.56 for a means to join two elements by applying a clip thereabout.

139, Textiles: Weaving, for looms for making the ordinary straight weave all-wire fabrics.

4 Fabric-making machines comprising a rotary device, as a drum or wheel, upon which the fabric wires or elements are secured together during its rotation.

5 Making an all-wire fabric in which a plurality of warp or runner strands are secured together, usually by twisting, to form a cable, and to which the woof, stay, or cross wires are secured.

6 Making an all-wire fabric having hexagonal meshes, like chicken wire or poultry netting. In the mesh made by the devices of this subclass the cross wires are continuous and are not cut.

(1) Note. Search this class, the stay-applying subclasses, for machines in which the cross wires are cut, thus forming separate woof-wires or stays.

SEE OR SEARCH CLASS:

87, Textiles: Braiding, Netting, and Lace Making, for machines producing similar fabrics of wire or other strand material but involving no wire working operation other than strand interrelating.

7 Making all-wire net fabric having quadrangular or four-sided meshes.

SEE OR SEARCH THIS CLASS, SUBCLASS:

4, 5, for fabric making machines in which the warps or runners are composed of a plurality of strands secured together, for example, by twisting.

SEE OR SEARCH CLASS:

87, Textiles: Braiding, Netting, and Lace Making, subclass 24 and indented subclasses, for machines for making similar textile fabrics.

164, Metal Founding, subclasses 91+ and particularly subclass 110 for processes of joining wires by metal casting operations.

9 Making wire netting having diamond or V-shaped meshes, the cross wire or wires being continuous in distinction from those inventions for the making of diamond mesh fabric where the wires are not continuous.

(1) Note. Search this class, the Fabric-making, Stay-applying subclasses, for inventions involving cutting the wires to form stays or working in separate wires as stays.

10 Securing wire stays or separate cross wires to the runners, strands, or warp wires of wire netting not classifiable in the subclasses of this group defined below.

(1) Note. In this group are classifiable all devices wherein the so-called "stays" are formed by cutting the cross wire at the edges of the fabric.

SEE OR SEARCH THIS CLASS, SUBCLASS:
6, 7, 8, and 9, for mesh-making machines employing continuous cross or woof wires, etc.

11 Applying clips, tie-wires, or equivalent, whether of wire or sheet metal, to the intersecting wires of a wire fabric and by which they are secured together. Also magazines for clips or feeding devices relating to all-wire fabric-making.

SEE OR SEARCH THIS CLASS, SUBCLASS:
53, 54, 55, for clip-affixing implements.
116, for dies employed in machines for applying the wires to intersecting wires, as in fence fabrics.

SEE OR SEARCH CLASS:
29, Metal Working, subclasses 428+, and particularly subclasses 505+ indented thereunder, for a process of deformably applying a clip to work, and subclasses 700+ for apparatus for doing the same, particularly subclass 243.56.

12 Making-all-wire fabric by wrapping or otherwise securing suitable loops formed in stay wires about the strand wires.

SEE OR SEARCH THIS CLASS, SUBCLASS:
21,

13 Making an all-wire quadrangular, usually square, mesh fabric in which the cross wires or stays are composed of short lengths each connecting a plurality of strands, usually two, said lengths together forming a "sectional stay".

(1) Note. This subclass is intended to include all looms or fixed machines utilizing short stays or cross wires of short length.

14 Fabric-making in which suitable loops are formed in the warp or strands, usually for the purpose of securing the stays therein.

SEE OR SEARCH THIS CLASS, SUBCLASS:
22,

15 Making fabric by wrapping or coiling the stay wires successively around the strands, usually commencing at one of the edge strands, and coiling the stay successively about each runner and securing the end of the stay to the strand on the opposite edge of the fabric.

SEE OR SEARCH THIS CLASS, SUBCLASS:
53, and 54, for implements employed in making fabrics in this manner.
117, for hand tools for coiling or winding one wire about another, as in successively wrapping a stay about the several fence strands.

16 Portable machines for making all-wire netting. For example, all machines employed in the field are classifiable in this group.

SEE OR SEARCH THIS CLASS, SUBCLASS:
52, for devices adapted to be held in the hand or partially supported by the work.
117, and indented subclasses, for devices of more general application, as in joining wires. Subclass 117 includes all implements for coiling one wire about another, as in successively wrapping stays.

17 Portable all-wire fabric-making machines that make an all-wire netting in which the wires employed are practically continuous and separate or so-called stays are not separately interwoven or secured to the strands or the cross wires or in which the cross wire is not subsequently cut at the edge of the fabric.

SEE OR SEARCH THIS CLASS, SUBCLASS:
6, and 7, for looms or stationary machines for making similar fabrics.

18 Portable machines for securing separate wires or stays to the warp, strands, or runners and not classifiable in the minor subclasses of this group. Stay-applying machines operate to secure separate cross wires or stays to the warp wires or strands or the cross wires are cut at the edge of the fabric thus forming separate stays.

19 Portable stay-applying machines that twist or unite a plurality of strands together either in making and securing a multistrand stay to the warp wires or for securing wire stays, single or multiple, to a multistrand runner or warp.

SEE OR SEARCH THIS CLASS, SUBCLASS:
5, for fixed machines or looms that secure stay wires to a multistrand runner or warp.

21 Portable stay-applying machines that secure the stays in place by wrapping or coiling loops suitably formed in the stay about the strand wires.

SEE OR SEARCH THIS CLASS, SUBCLASS:
12, for similar features in looms.

22 Portable fabric-making machines that form loops or kinks in the strands or warps and by which the stays are secured in place, each loop usually embracing a stay.

SEE OR SEARCH THIS CLASS, SUBCLASS:
14, for looms having like features.

23 Portable fabric-making machines that secure the stays to the strands by wrapping or coiling operations, each stay being successively wrapped around the strands in crossing the fabric, thus securing them in place.

SEE OR SEARCH THIS CLASS, SUBCLASS:
15, for looms that operate in like manner.
53, and 54, for implements employed in making fabrics in this manner.
117, for hand tools for coiling or winding one wire about another, as in successively wrapping a stay about the several fence strands.

24 Inventions in making selvages or binding the edge strands or in coiling or knotting the ends of the stays to the edge strands of the fabric, and machines and attachments for, or specific structures or combinations in, all-wire fabric making devices.

SEE OR SEARCH THIS CLASS, SUBCLASS:
14, for similar features.

25 Inventions in or devices, looms, or stationary machines for making a slatted wire-fabric--such as a picket or slatted wire fence, barrel fabric, basket fabric, etc.--and not classifiable in the minor subclasses defined below. The term “slat” is used in a generic sense to include wood, metal, etc., or any other material except wire.

(1) Note. Search appropriate subclasses of all-wire machines, for machines for forming wire pickets or stays into a fabric;

SEE OR SEARCH THIS CLASS, SUBCLASS:
3, and subclasses indented under Fabric-making, All-wire, for such similar structural features as are also characteristic of looms.
28, see the search note for slat-and-wire fabric-weaving machines.

SEE OR SEARCH CLASS:
139, Textiles: Weaving.

26 Slat-and-wire fabric making involving the cutting of the slats to determine lengths or trimming or shaping the same.

27 Slat-and-wire fabric-making machines provided with hoppers or any type of magazine for holding, supplying, or feeding the slats or pickets to the machine.

28 Slat-and-wire machines having means for forming spaces between the slats at predetermined points by the omission of a slat or by the prevention of slat-feeding at the proper time. This subclass includes machines particularly adapted to the manufacture of barrel fabric.

29 Machines having lifting frames or other movable carriages for relatively and periodically placing the slats, strands, or operating mechanism in securing relation--for example, moving the strand-twisting heads periodically into engagement with the strands to be twisted or coiled about the slats.

SEE OR SEARCH THIS CLASS, SUBCLASS:
32, and 44, for slat “beaters” or slat-placing mechanism.

30 Inventions in fabric-making wherein the slats are secured by the mutual twisting together of the two or more strands of which a warp or runner is composed and not classifiable in the minor subclasses defined below.

SEE OR SEARCH THIS CLASS, SUBCLASS:
34, for machines for coiling one of the strands about another or winding a continuous binding wire around a strand.
52, for implements specific to wire-fabric making.
118, and indented subclasses, and 121 for implements employed in uniting intersecting fence strands by coiling in the making of slatted wire fabrics.

31 Looms or stationary machines having means for embedding the fabric wires or stays in the slats, usually by the provision of suitable pressure rollers or hammers.

32 Strand-twisting slat-and-wire fabric machines provided with means for beating or hammering the slats to place in the crotch between the strands.

SEE OR SEARCH THIS CLASS, SUBCLASS:
42, for beaters in portable machines.
31,

33 Devices, usually separate from and employed in connection with strand-twisting machines, for separating or keeping the strands apart or from twisting exterior to or in advance of the twister-heads during the twisting operation.

34 Making slatted wire fabric in which the slats are secured to the strands by the coiling or winding of one strand about the other, one only of the runner strands being bent or coiled, the other remaining substantially straight, or a smaller so-called “binding” or continuous tie-wire may be used and coiled about the strand between the slats, thus securing the latter in place.

SEE OR SEARCH THIS CLASS, SUBCLASS:
49, for machines that operate to secure the slats by securing separate pieces of wire or “tie-wires” to the strands embracing the slats.
57, for implements for the same purpose.

35 Looms for making slatted wire fabric or fencing by wire-crossing mechanism.

(1) Note. See Search Notes under subclass 25.

SEE OR SEARCH CLASS:
139, Textiles: Weaving for devices for ordinary weaving in the making of an all-wire fabric.

36 Twister-heads of the kind employed in wire-fabric making machines.

SEE OR SEARCH THIS CLASS, SUBCLASS:
114, 115, 119, for similar heads employed in machines for twisting or coiling the ends or wires together.

SEE OR SEARCH CLASS:
19, Textiles: Fiber Preparation, subclass 154.
56, Harvesters, subclass 132, 133, 451+, 458+.

37 Portable devices or machines employed in the field (mostly fence machines) for making slat-

ted wire fabric and not classifiable in the minor subclasses defined below.

SEE OR SEARCH THIS CLASS, SUBCLASS:
52, and indented subclasses, for implements or tools adapted to be held in the hand or partially supported by the work.

38 Portable machines having slat holders, hoppers or equivalent magazine for the supply of slats.

SEE OR SEARCH THIS CLASS, SUBCLASS:
27,

39 Portable machines having strand-twisting devices for mutually twisting the strands together to secure slats in place between them.

SEE OR SEARCH THIS CLASS, SUBCLASS:
30+, for similar features in looms.

40 Machines provided with means for placing the slats in definite relation either laterally, longitudinally, or angularly.

SEE OR SEARCH THIS CLASS, SUBCLASS:
41, for portable machines having plumbing or leveling devices.

41 Portable slat-and-wire fabric-making machines having strand-twisters in which means are provided for the angular adjustment thereof or for positioning the slats relatively to the surface of the ground, whereby the slats may be secured in a vertical position or plumb.

42 Portable machines provided with distinct means for beating the slat to place in the shed or crotch between the strands. The beating of the slat to place by the periodic movement of the machine itself does not place it in this subclass. The beaters employed are usually auxiliary and operate in a vibratory manner.

SEE OR SEARCH THIS CLASS, SUBCLASS:
32, for beaters in looms.

43 Portable slat-and-wire machines having provision for adjusting the twisting devices vertically to secure a desired space relation between the strands or runners.

44 Portable slat-and-wire fabric machines having twisters comprising a suitable carrier provided with guides, clamps, or holders for the strand wires, which are eccentrically mounted at one side of and revoluble upon or within a ring or substantially annular guide forming a sort of eccentric strap. The carrier holds the strand wires at one side of the strap center and revolves or turns within it, so as to move the wires in a circular path to the opposite side to cross them. This is repeated to produce the desired number of twists.

45 Portable slat-and-wire fabric-making machines which operate to effect a simple or single cross in the strand wires between the pickets or slats, distinguising these machines from such as produce more than a simple cross.

SEE OR SEARCH THIS CLASS, SUBCLASS:
50, for portable devices for producing mere relative separation or displacement and crossing of the strands by horizontal movement thereof and in a few instances by vertical movement.

46 Portable slat-and-wire fabric machines provided with wire-crossers having an oscillatory strand holding and crossing member, which either structurally or functionally is of the nature of a compound lever.

47 Portable slat-and-wire machines having means for coiling or wrapping one strand of the warp or runner around the other in securing the slats or for coiling a binding or continuous tie-wire around a strand.

SEE OR SEARCH THIS CLASS, SUBCLASS:
34, for loom machines.

48 Portable machines for making slatted wire fabrics by weaving processes, the strands being separated and crossed usually by imparting to one or both of them horizontal movement, in some cases vertical movement.

SEE OR SEARCH CLASS:
139, Textiles: Weaving, for stationary machines or looms employed for ordinary weaving in the making of all-wire fabrics, and for looms employing other material than wire.

49 Portable slat-and-wire machines for applying a separate tie-wire to the strand in securing each slat.

SEE OR SEARCH THIS CLASS, SUBCLASS:
57, for tie-wire applying implements.
116, for dies employed in machines for applying tie-wires.

50 Devices used in connection with fabric- making machines for placing strands or runners in desired relative position or spacing them one from another.

51 Devices for holding or clamping the strand wires, slats, or pickets in attaching the latter or while effecting repairs, splicing, twisting, etc,; also structural details of fabric machines for clamping the fabric wires while making the fabric.

SEE OR SEARCH THIS CLASS, SUBCLASS:
117,

SEE OR SEARCH CLASS:
294, Handling: Hand and Hoist-Line Implements, subclasses 132+ for wire engaging and clamping means for use with fence wire-tensioning apparatus.
403, Joints and Connections, appropriate subclasses, particularly subclass 206 for Joints and connections in general.

52 Miscellaneous wire-working tools or devices not otherwise classifiable adapted to be held in the hand or partially supported by the work, which are employed in making or repairing fabrics.

SEE OR SEARCH THIS CLASS, SUBCLASS:
102.5, for looping and twisting implements employed in stretching or tightening fence wires.
117, or indented subclasses for tools for joining wire by twisting, coiling, etc.
123, for wire-working implements of more general application.

SEE OR SEARCH CLASS:
81, Tools, appropriate subclasses.

53 Fabric-making implements having a wire supply or reel from which the cross or stay wire is drawn; also implements having magazines for the supply of clips, lock-plates, etc. Most of the fabric-making implements of magazine type are employed in supplying and successively wrapping a wire about the strands, which may be subsequently cut to form a stay.

SEE OR SEARCH THIS CLASS, SUBCLASS:
15, for looms, employed in similarly wrapping stays.
23, for portable machines.
117, for implements employed for this purpose.

54 Fabric-making implements of the magazine type having a rotary member or head that in operation wraps or twists the cross wire, clip, or the tie-wire around the strand.

56 Fabric-making implements for securing slats, pickets, etc., to the strands by the usual wire-working operations, but not staplers for driving pointed structures.

57 Slat-attaching implements for applying a tie-wire to a strand, so as to embrace and thereby secure the slat in place.

SEE OR SEARCH THIS CLASS, SUBCLASS:
49, for portable machines employed in applying tie-wires.
117, and particularly 119 and 122 for implements employed in splicing wire having similar coiling or twisting elements.

58 Miscellaneous inventions in barbing wire, applying barbs, making barb-wire fences, etc., not classifiable in the minor subclasses defined below.

SEE OR SEARCH THIS CLASS, SUBCLASS:

66, for machines employed in applying sheet-metal barbs.

SEE OR SEARCH CLASS:

29, Metal Working, subclasses 7.1+ for processes and devices for cutting barbs of barb-wire fencing, subclass 9 for barbing fishhooks, and subclass 23.1 for barbing cylindrical bodies.

59, Chain, Staple, and Horseshoe Making, subclass 73 for barbing staples.

72, Metal Deforming, subclasses 184+ for notching and burring wire by rolling.

59 Machines having means for the infeeding of the barb-wire from which the barbs are formed.

(1) Note. This particular subclass (59) with subclasses 64 and 65, includes all barbing machines for forming or applying other than four-pointed barbs to strands by means of dies or oscillating formers, which shape and clamp the barb in place.

SEE OR SEARCH CLASS:

226, Advancing Material of Indeterminate Length, appropriate subclasses for methods of, and apparatus for, feeding material without utilizing the leading or trailing ends to effect movement of the material.

60 Barbing machines having means for feeding and applying the barb-wire and employing twisting devices for twisting a plurality of runner strands, usually two, into a cable, and thereby securing the barbs thereto. Means are also usually provided for coiling the barb-wire, cutting and forming barbs.

(1) Note. Search this class, subclasses defined below or details of coiling, cutting, and barb-forming.

61 Machines for applying-four-point wire barbs by other processes than coiling or strand crimping.

(1) Note. In this miscellaneous subclass are all machines having dies or formers for applying four-point barbs.

SEE OR SEARCH THIS CLASS, SUBCLASS:

59, for machines for applying other than four-point barbs.

62 Machines for applying four-point barbs having means for crimping the strands or runners.

SEE OR SEARCH THIS CLASS, SUBCLASS:

64, for machines for applying two-point barbs to and crimping the runners.

105, for crimping features.

106, for crimping implements.

63 Machines having rotary heads or coiling devices for applying four-point barbs.

SEE OR SEARCH THIS CLASS, SUBCLASS:

65, for specific coiling features or elements in two-point barb machines.

64 Machines for applying two-point barbs having means for crimping the strands to which the barbs are secured.

SEE OR SEARCH THIS CLASS, SUBCLASS:

62, for similar crimping features in four-point barbing machines.

105, for crimping features.

106, for crimping implements.

65 Machines for making two-point barbs in which the barbs are secured to the strands by means of rotary coiling heads.

SEE OR SEARCH THIS CLASS, SUBCLASS:

63, for similar coiling devices employed in applying four-point barbs.

66 Applying barbs of sheet-metal to wire strands.

SEE OR SEARCH CLASS:

29, Metal Working, subclasses 7.1+ for processes and devices for cutting barbs or barb-wire fencing.

67 The making or applying of separate barbs of wire and barb-applying machines distinguished by the absence of barb-wire feeding mechanism.

69 Hand tools employed in barbing operations, usually for forming and applying barbs to wire.

70 Barbing implements having a rotary member or jaw for coiling, winding, or clamping a barb upon a wire.

71 Making articles from wire stock not classifiable otherwise.

SEE OR SEARCH CLASS:

57, Textiles: Spinning, Twisting, and Twining, appropriate subclasses for wire-rope and cord making.

72, Metal Deforming, for mere metal shaping.

156, Adhesive Bonding and Miscellaneous Chemical Manufacture, subclasses 47+ as the generic home for processes of making indefinite length electrical conductors not elsewhere provided for.

227, Elongated-Member-Driving Apparatus, subclasses 82+ for combined apparatus for making and driving a member, e.g., nail.

242, Winding, Tensioning, or Guiding, subclasses 430+ for permanently winding elongated material; e.g., wire, on a core to make certain articles; subclasses 360+ for forming loops usually of wire into a storage coil, and subclasses 470+ for winding wire onto a storage spool.

335, Electricity: Magnetically Operated Switches, Magnets, and Electromagnets, subclasses 209+ for electromagnets.

336, Inductor Devices, appropriate subclasses for the structure of inductive devices (e.g., transformers and inductive regulators).

470, Threaded, Headed Fastener, or Washer Making: Process and Apparatus, subclasses 121+.

71.5 This subclass is indented under subclass 71. Subject matter where the article made is an electric lamp or electric space discharge device electrode or electrode assembly.

(1) Note. Electric space discharge devices include spark plugs, radio tubes, X-ray tubes, cathode ray tubes and similar electric space discharge devices.

(2) Note. The electrode made may be a grid, filament, or any other electrode which is made of wire, and the manufacture of the article may include mounting the electrode upon its support where only wire-working operations are included in the claims.

(3) Note. Devices, see Class 445, Electric Lamp or Space Discharge Component of Device Manufacturing, subclasses 35+, 46+ and 66+ and the search notes thereunder.

SEE OR SEARCH CLASS:

313, Electric Lamp and Discharge Devices, appropriate subclasses for electric lamps and electric space discharge devices. Note subclass 326 for the electrodes for electric lamps and electric space discharge devices, per se, and subclasses 542+ for photo cathodes, per se, or combined with a phospher or a envelope.

445, Electric Lamp or Space Discharge Component or Device Manufacturing, subclasses 35+, 46+ and 66+ and the search notes thereunder for other classes which provide for processes or apparatus for the manufacture of electric lamps or electric space discharge devices.

71.6 This subclass is indented under subclass 71.5. Subject matter where the process or apparatus includes mounting a filament upon its supports.

SEE OR SEARCH THIS CLASS, SUBCLASS:

111, and indented subclasses for processes and apparatus for joining wire.

SEE OR SEARCH CLASS:

313, Electric Lamp and Discharge Devices, subclass 271 for electric lamps and electric space discharge device filaments in combination with the supporting structure for the filament.

445, Electric Lamp or Space Discharge Component or Devices, Manufacturing, subclasses 29+ and 67+ and the search notes thereunder for the methods of and apparatus for mounting the electrodes of an electric lamp or an electric space discharge device upon their supports.

72 Making wire heddles or heddle eyes for weavers' harness employed in weaving.

SEE OR SEARCH CLASS:

29, Metal Working, subclass 4.6 for methods and apparatus for making cord heddles.

73 Making wire bale-ties for baling or bundling, eyes or hooks being formed at the ends of the tie during its formation.

SEE OR SEARCH THIS CLASS, SUBCLASS:

80, for specific hook-forming devices.

93.2, for tools for tightening and joining bale bands, and see the Notes thereto for other binding devices.

102, for specific loop-forming devices.

104, for specific eye-forming devices.

115, for machines for splicing or twisting the ends of bale-ties together.

SEE OR SEARCH CLASS:

24, Buckles, Buttons, Clasps, etc., subclass 16, and indented subclasses for the article of manufacture; 27 and 29 for illustrated methods of making or tying.

81, Tools, subclass 9.3.

74 Making wire into articles known to the trade as "box-straps" or "bundling wire," usually comprising strands having eyes or loops formed at intervals throughout the length.

SEE OR SEARCH THIS CLASS, SUBCLASS:

102, and 104, for miscellaneous loop and eye forming devices respectively.

75 Making wire bails for pails, boxes, etc., and for supplying handles thereto, most of which include means for forming hooks or eyes in the ends of the bail.

SEE OR SEARCH THIS CLASS, SUBCLASS:

102, for loop-forming devices.

104, for eye-forming devices.

76 Making ferrules of wire by coiling, and generally including means for soldering the convolutions into an integral structure.

SEE OR SEARCH CLASS:

16, Miscellaneous Hardware, subclass 108, for the article.

72, Metal Deforming, appropriate subclasses for a method of or means for convoluting a metal strip.

77 Bending and shaping wire into forms suitable for use in hats and hat frames.

SEE OR SEARCH CLASS:

223, Apparel Apparatus, subclass 17 for inserting wires in hat brims.

80 Making wire hooks.

SEE OR SEARCH CLASS:

29, Metal Working, subclass 7 and 9.

81 Making wire garment hooks or garment hooks and eyes.

81.5 This subclass is indented under subclass 80. Subject matter where the article made is a hanger for a coat or other garment.

(1) Note. The hanger usually consists of a generally triangular wire frame having a hook formed at the apex thereof.

SEE OR SEARCH THIS CLASS, SUBCLASS:

83, for the making of wire clothespins.

SEE OR SEARCH CLASS:
223, Apparel Apparatus, subclass 85 for the article.

82 Inventions for making wire clips or fasteners not otherwise classifiable. Includes devices for the making of unpointed staples or those not especially adapted to be driven.

SEE OR SEARCH THIS CLASS, SUBCLASS:
71, for search data for staple making, forming, and driving devices wherein the staple made or employed is adapted to be driven.

SEE OR SEARCH CLASS:
29, Metal Working, subclass 13 for devices for making paper-fastener clips designed to perforate the paper; and 5, for clips of that type. See the appropriate subclasses under 592+ for a method of making and/or applying a ring, clip, etc., to livestock, e.g., a hog, and subclasses 33+ and 243.5+ for a means to do so.
72, Metal Deforming, for making an article by a mere metal-shaping operation.
493, Manufacturing Container or Tube From Paper; or Other Manufacturing From a Sheet or Web, especially subclasses 375+ for pin ticket making and an attaching device for applying a clip to a tag.

83 Making wire clips designed for temporarily securing clothing or the like to a clothes-line.

84 Making wire lacings for securing the ends of belts or the edges of fabrics together.

SEE OR SEARCH THIS CLASS, SUBCLASS:
93, for coiling devices for forming and applying belt fasteners or lacings comprising wire coils.

SEE OR SEARCH CLASS:
24, Buckles, Buttons, Clasps, etc., subclass 31, and indented subclasses for the article.

85 Making wire articles adapted to be subsequently applied to bottles or stoppers for securing the latter.

SEE OR SEARCH THIS CLASS, SUBCLASS:
94, for machines for applying wire to bottles and corks for stoppering the bottle.

86 Making wire cork or stopper extractors of spiral form.

SEE OR SEARCH CLASS:
72, Metal Deforming, subclass 66 and 135+ for coiling a metal workpiece, and subclasses 64+ and 299 for twisting such.
81, Tools, subclass 3.45 for corkscrews wherein the method may be illustrated in the article.

87 Making hairpins from wire stock by bending or twisting.

(1) Note. Mere coating, enameling, soldering, or like operations foreign to those characterizing wire-working are excluded from this subclass unless combined with operations or means for bending or twisting wire.

SEE OR SEARCH CLASS:
59, Chain, Staple, and Horseshoe Making, subclasses 71+ for making or forming staples generally U-shaped, having legs substantially equal in length and adapted to be driven into wood or other material.
163, Needle and Pin Making, subclass 6 and 7, and note the lines of division set forth by definitions.

88 Making or forming wire rings, hoops, or closed loops of wire.

SEE OR SEARCH THIS CLASS, SUBCLASS:
81, 104 and 115, for machines for splicing the ends of a wire hoop together.

SEE OR SEARCH CLASS:

29, Metal Working, subclass 7 for making eyebolts and hooks, subclass 8 for making finger rings, and subclasses 592+ for methods of making rings, loops, etc.

57, Textiles: Spinning, Twisting, and Twining, subclass 21, 201, and 362 for endless bands made by twisting or twining operations and machines and processes for making them.

59, Chain, Staple, and Horseshoe Making, subclasses 16+ for combined machines for making chain devices.

72, Metal Deforming, appropriate subclasses for plastically working an annular metal workpiece.

144, Woodworking, subclass 268, for coiling wooden hoops.

219, Electric Heating, subclasses 51+ for ring or loop making, involving electric welding.

223, Apparel Apparatus, subclass 6 and 27 for hoop-skirt making machines.

227, Elongated-Member-Driving Apparatus, subclass 77 for apparatus for deforming a member, e.g, ring, remote from the work-surface.

470, Threaded, Headed Fastener, or Washer Making: Process and Apparatus, subclasses 87+.

89 Setting coil springs or causing them to conform to predetermined length or shape, generally by compressing them to produce uniformity of product.

SEE OR SEARCH CLASS:

29, Metal Working, subclass 215 and 225.

90 Making wire stays as a separate article of manufacture, principally the stays or cross wires employed in making fabrics or fences.

SEE OR SEARCH CLASS:

245, Wire Fabrics and Structure, for fabric stays.

256, Fences, subclass 35 for the manufactured stay.

91 Making crimped or bent wire stays employed as stiffeners in garments, particularly corset stays.

SEE OR SEARCH CLASS:

2, Apparel, subclasses 259+, especially subclass 264 for metal stays for corsets.

128, Surgery, subclasses 465+ for wire and metal stays used in brassieres, including stays, per se, for brassieres only; and subclasses 567+ for wire and metal stays used in corsets.

223, Apparel Apparatus, subclass 6 and 27 for machines for making or applying types of garment-stiffeners other than bent or crimped wire.

92 Making spiral studs--for example, shirt-studs--comprising a tapering or conical coil of wire and terminating in an axially alined shank or end at right angles to the plane of coiling.

SEE OR SEARCH CLASS:

72, Metal Deforming, subclasses 138+ for an apparatus for forming a metal coil of varied pitch or diameter.

92.1 Limited to devices on or by which material, generally wire, is wound to produce a coil of predetermined form or shape, comprising mostly formers for winding armature coils.

SEE OR SEARCH CLASS:

72, Metal Deforming, appropriate subclasses involving wrapping metal around a form or core, for combined apparatus including such a core, and subclasses 462+ for a form or core, per se.

242, Winding, Tensioning, or Guiding, subclasses 430+ for winding elongated material on a core to provide a composite article and 360+ for forming loops usually of wire into a storage coil.

92.2 Forms or frames that are adapted to be rotated for winding the material to shape or in combination with the devices or machines for rotating them.

92.3 Methods and apparatus in which a helix rotated about its axis adjacent a row of loops or holes threads itself through the loops or holes successively.

(1) Note. Included here, and in the indented subclasses, are processes and apparatus involving the mere juxtapositioning of elements plus the necessary manipulation required to interlace a helix with said elements to form a unitary web, fabric, or assembly. The absence of wire deformation, cutting and/or tensioning will not exclude processes and apparatus otherwise within the scope of this subclass.

(2) Note. Included here, for example, is the application of helices to the edges of perforated sheets or leaves so as to make a "spiral" bound book (see particularly subclass 92.93), the joining of coil elements by helices or the mutual intercoiling of helices to form spring fabrics, and the linking of belt ends by helices.

SEE OR SEARCH CLASS:

29, Metal Working, subclass 240.5 for means to insert and/or remove a helix by rotation and subclass 456 for related methods.

59, Chain, Staple, and Horseshoe Making, subclass 20 for apparatus wherein a continuous rod or wire is coiled into a helix cut into sections to form links, and said links assembled and united into a completed chain.

245, Wire Fabrics and Structure, subclass 6 for fabrics comprising a plurality of intercoiled helices.

281, Books, Strips, and Leaves, subclass 25 for a plurality of sheets secured together by means of a helix interlaced through aligned perforations along a margin of said sheets.

92.4 This subclass is indented under subclass 92.3. Processes .

92.5 This subclass is indented under subclass 92.3. Apparatus including means for repeated interlacing of helices through a particular aligned loop row without intervening shifts in relative position between fabric and helix projecting means, such repeated interlacing occurring periodically in response to a predetermined sequence.

(1) Note. The plural helices or "cords" are usually to delineate the borders of desired lengths of fabric and also serve as reinforcements for said borders.

SEE OR SEARCH CLASS:

5, Beds, subclass 260 for "cords" in the margin or rim of a bed bottom fabric.

92.6 This subclass is indented under subclass 92.3. Apparatus characterized by two or more helix projecting means positioned and operatively linked as to effect a mutual intercoiling of the helices concurrently with helix projection.

(1) Note. Included here are the devices which simultaneously form and intercoil all the helices comprising the full width of a fabric the axial length of the helices ordinarily fixing the extent of the fabric length.

(2) Note. Interlacing of plural helices without mutually intercoiling said helices is not classified in this subclass. See the search note below.

SEE OR SEARCH THIS CLASS, SUBCLASS:

92.3, and throughout the subclasses indented thereunder.

92.7 This subclass is indented under subclass 92.3. Devices with features other than and in addition to means for providing a helix and applying it by axial rotation to successive loops, means for positioning said loops, and interrelating control means.

(1) Note. In this subclass, for example, are combinations with means to shape the selvage edges of the assembled fabric, combinations with means to deform the helix after intercoiling, and combinations with automatic control means.

(2) Note. Helix providing includes means for forming a helix with or without subsequent cut-off or means for supplying prepared or preformed helices with or without subsequent cutting means. Coiling, per se, with or without subsequent cut-off is classified in Class 72, Metal

Deforming, subclasses 135+; the additional step of guiding and/or positioning or interlacing placing the combination within the scope of subclasses 92.3+. See Class 83, Cutting, for cutting, per se.

(3) Note. Helix applying includes helix guide means as well as means to shift the helix along, and rotate it about the cylindrical axis of said helix. Both shift and rotation may be an inherent function of a helix forming means. The axial shift may be effected solely by engagement of a positively rotated helix with aligned loops.

(4) Note. Positioning includes clamping, guiding, and/or supporting means for successive loops and/or assembled fabric of which said loops form a working edge and means for reeling assembled fabric and/or feeding said fabric from an assembly or working zone. In addition to the shifting means set forth in (2) Note, above, positioning includes means for relatively shifting a loop row and/or assembled fabric with respect to helix applying means.

(5) Note. Interrelating control includes cyclic interlock means; that is, means for periodic or sequential operations in which the same series of operations on the material are repeated unchanged, in the absence of adjustments of the machine under a particular stimulus such as the presence or absence of material or the application of power to the drive shaft. Interrelating control does not include automatic control, as to which see (6) Note, below.

(6) Note. Automatic control includes means to sense a condition or change of condition which means effects a control operation on the apparatus. In this subclass the condition or change of condition is usually a misalignment, tangling, and/or breaking of a projected helix.

SEE OR SEARCH THIS CLASS, SUBCLASS:

92.5, for automatic control combined with pattern or cording means.

SEE OR SEARCH CLASS:

72, Metal Deforming, see (2) Note.

83, Cutting, see (2) Note.

192, Clutches and Power-Stop Control, subclasses 116.5+ for control mechanism, per se, usually automatic in operation, for stopping a machine when some part of the machine fails to function, or the material fails or is disarranged.

226, Advancing Material of Indeterminate Length, appropriate subclasses for methods of, and apparatus for, feeding material without utilizing the leading or trailing ends to effect movement of the material.

92.8 This subclass is indented under subclass 92.3. Apparatus including means for shifting rows of loops or openings successively into position for application of a helix.

(1) Note. This subclass includes means which in addition effect a relative shift along the cylindrical axis of a projected helix, in increments of half the helix pitch, between the projector and a row of loops, said shift occurring between successive interlacing operations.

SEE OR SEARCH CLASS:

226, Advancing Material of Indeterminate Length, appropriate subclasses for methods of, and apparatus for, feeding material without utilizing the leading or trailing ends to effect movement of the material.

92.9 This subclass is indented under subclass 92.3. Apparatus characterized by the shifting of helix rotating means along a path substantially parallel to the cylindrical axis of a rotated helix during the intercoiling of the helix.

(1) Note. Included in this subclass are devices wherein shifting is effected solely by screwing action of a helix with respect to a row of loops or with respect to a fixed abutment in line with and in front of said row, the screwing action being imparted by positive rotation of a helix gripping chuck.

SEE OR SEARCH THIS CLASS, SUBCLASS:

92.8, for axially shifting of helix rotation means combined with loop row shifting means.

92.93 This subclass is indented under subclass 92.3. Apparatus including a plurality of axially parallel, radially spaced, grooved rollers, through which a helix is simultaneously guided, rotated, and advanced.

92.94 This subclass is indented under subclass 92.3. Apparatus including channel or grooved means through which a helix is projected, with or without helix deflecting elements, which fix the path along which the helix travels.

(1) Note. Included are helix guide means which serve to juxtaposition portions of a loop row with respect to another loop row and the path of a projected helix.

(2) Note. Included are channel or grooved means positioned about both helix and loop row.

93 Applying wire to articles--such as making and applying belt-lacings, wire couplings, clips, or joints, wiring nursery tags, making folding partition box packing, fastening springs to articles and the like the wire being bent, coiled, or twisted in a manner characteristic of wire-working devices, but excluding wire-winding.

SEE OR SEARCH CLASS:

29, Metal Working, subclasses 243.5+ for overedge assembly apparatus, e.g., a machine for applying belt books to a belt, in subclass 243.51.

56, Harvesters, subclasses 67+, 131+ and 432+.

81, Tools, subclass 9.3 for applying wire rings and clamps to hose couplings.

128, Surgery, subclass 332.

144, Woodworking, subclass 25 for a box hooping machine.

227, Elongated-Member-Driving Apparatus, subclass 82 for combined apparatus for forming and applying a member, e.g., nail.

493, Manufacturing Container or Tube From Paper; or Other Manufacturing From a Sheet or Web, subclasses 375+ for applying wire to a tag, usually involving feeding, cutting, twisting, or knotting.

93.2 This subclass is indented under subclass 93. Apparatus by which a flexible filament strand or band encircling the material is tensioned to increase its tightness about the material and while so tensioned has spaced portions secured together, such apparatus being supported manually or on the work.

SEE OR SEARCH THIS CLASS, SUBCLASS:

123.6, for stretching implements having a cutting feature.

SEE OR SEARCH CLASS:

100, Presses, subclass 29 for binder applying and securing apparatus, not otherwise provided for, such apparatus not being supported by the work or supported manually.

254, Implements or Apparatus for Applying Pushing or Pulling Force, subclasses 199+ for portable implements or apparatus for tensioning flexible material (e.g., tightening cord around a box) from which the implements or apparatus are detached after tensioning.

93.4 This subclass is indented under subclass 93.2. Apparatus in which the means to secure together the spaced portions of the binder includes means to deform a sleeve, a U-shaped clamp member within which the portions are received.

SEE OR SEARCH THIS CLASS, SUBCLASS:

100, Presses, subclass 30 for binder applying and securing apparatus, not otherwise provided for, the securing being by the deformation of a sleeve or U-shaped clamp about the said portions, such apparatus not being supported by the work or supported manually.

150+, for a sleeve of clamp deforming tool, per se, joining the ends of binder strip or wire.

93.6 This subclass is indented under subclass 93.2. Apparatus in which the tensioning of the binder about the material involves the intertwisting of the local spaced portions of the binder, such twisting being employed for joining the binder portions together.

SEE OR SEARCH THIS CLASS, SUBCLASS:
118+, for wire joining twister implements, per se.

SEE OR SEARCH CLASS:
100, Presses, subclass 31 for binder applying and securing apparatus not otherwise provided for, and including means for joining spaced portions of the binder element by the intertwisting of such spaced portions, such apparatus not being supported by the work or supported manually.

94 Wiring corks and bottles to provide suitable fastenings for securing the corks or stoppers to the bottles.

SEE OR SEARCH THIS CLASS, SUBCLASS:
1, for devices including more than the operation of wiring, as corking and wiring, etc.

95 Devices for wiring bottles and corks having means for rotating the bottle.

97 Applying wire to a suitable back, producing what is technically known as card-clothing, employed in carding machines.

SEE OR SEARCH CLASS:
19, Textiles: Fiber Preparation, subclass 114 for the article and its structural features, construction of teeth, etc.
227, Elongated-Member-Driving Apparatus, appropriate subclasses for devices for forming wire pins and inserting them into work, subclasses 79+ for devices for inserting wire into work and severing the inserted portion, and subclass 77 for devices for inserting card teeth and bending the inserted ends to engage the wool.

100 Applying or inserting a single row of teeth or combing needles in a narrow back or holder.

SEE OR SEARCH THIS CLASS, SUBCLASS:
97,

101 Inventions in what is technically known as "knotting"--i.e., securing the ends of a spiral wire spring either to itself or to another spring. The subclass, however, is intended to receive all miscellaneous patents involving wire-knotting devices not directly classifiable elsewhere.

SEE OR SEARCH THIS CLASS, SUBCLASS:
93.2, for apparatus supported manually or on the work and tightening and joining a flexible binder therearound.

SEE OR SEARCH CLASS:
5, Beds, subclass 257, 271, and 272 for illustrated methods of "knotting".
56, Harvesters, subclass 433, and indented subclasses for machines for knotting cord or wire.
100, Presses, subclasses 29+ and 32 for binding devices not elsewhere classified, having means to join the ends of the binder.
289, Knots and Knot Tying, subclass 2 and indented subclasses, to and including subclass 12.
493, Manufacturing Container or Tube From Paper; or Other Manufacturing From a Sheet or Web, subclasses 375+ for applying wire to a tag, usually involving feeding, cutting, twisting, or knotting.

102 Inventions for forming loops in or doubling wire.

SEE OR SEARCH THIS CLASS, SUBCLASS:
104, when the loop is formed into an eye; and 88.

SEE OR SEARCH CLASS:
29, Metal Working, subclass 5.
56, Harvesters, subclass 138, 139, 142, 145, 147, 150, 151, and 433 and indented subclasses.

59, Chain, Staple, and Horseshoe Making, subclass 21, 22 and 71.

227, Elongated-Member-Driving Apparatus, subclass 77 for applying a member, e.g., wire, to work and deform an end portion, e.g., to form a loop.

289, Knots and Knot Tying, subclass 2 and indented subclasses, to and including subclass 12.

102.5 Loop-forming implements for operating upon a wire strand intermediate its ends for the purpose of taking up slack, the implement being then removed.

SEE OR SEARCH CLASS:

24, Buckles, Buttons, Clasps, etc., subclass 71.1. and indented subclasses for permanent tighteners applicable to a strand intermediate its ends.

103 Coiling the ends of wire loops or other portions thereof.

104 Forming eyes or closed loops in wire, generally by bending or twisting.

SEE OR SEARCH THIS CLASS, SUBCLASS:

73, 88, 102, and 114.

SEE OR SEARCH CLASS:

29, Metal Working, subclass 7 for eyebolt and hook making devices; 9 for fish-hook making, and 20, for forming eyes in spectacle frames.

79, Button Making, subclass 2 for forming eyes in wire button shanks.

163, Needle and Pin Making, subclass 7.

105 Forming crimps or kinks in wire or wire fabrics. This subclass includes all but the implements which are classified in the subclass immediately following.

SEE OR SEARCH CLASS:

72, Metal Deforming, appropriate subclasses for a method of or means for corrugating a metal workpiece, for instance (but not exhaustively), subclass 196, for shaping by a "flying tool" engaging moving work, and subclass 385 for corrugating a stationary work-piece between bending dies.

156, Adhesive Bonding and Miscellaneous Chemical Manufacture, subclasses 339+ for processes for reshaping or deforming sheets or webs of paper or paper like material.

425, Plastic Article or Earthenware Shaping or Treating: Apparatus, subclass 369 for an endless surface (e.g., roll, etc.) type means having structure for corrugating a preform, and subclass 391 for a preform convoluting or twisting means not otherwise provided for.

106 Hand tools specially adapted for crimping wire.

SEE OR SEARCH CLASS:

81, Tools, particularly subclasses 300+ for tool-jaw(s) positioned by relatively movable plural handles (e.g., pliers).

107 Wire-working operations upon wire fabrics or in finishing the same by gaging, straightening, leveling, compressing, cutting, forming, or shaping by dies, etc., and not classifiable in the minor subclasses below.

SEE OR SEARCH CLASS:

72, Metal Deforming, appropriate subclasses for mere bending or straightening of a metal workpiece.

108 Devices for stretching wire fabric, but not devices for stretching individual wires, nor permanent, portable or removable fence stretchers.

SEE OR SEARCH THIS CLASS, SUBCLASS:

123.5, and indented subclass for wire-working implements for stretching individual wires.

SEE OR SEARCH CLASS:

26, Textiles: Cloth Finishing, subclasses 71+ for apparatus to stretch natural and plastic cloth, as running webs; and see subclasses 51+ for the combination therewith of a diverse operation.

69, Leather Manufactures, subclass 46.

112, Sewing, subclass 119 for quilting-frame structure.

254, Implements or Apparatus for Applying Pushing or Pulling Force, subclasses 199+ for portable implements or apparatus for tensioning flexible material (e.g., wire fence fabric, fence wires) from which the implements or apparatus are detached after tensioning.

256, Fences, subclass 37 and indented subclasses for permanently mounted fence stretchers.

109 Stretchers specially adapted for use in attaching wire fabrics to frames, such as screen, door, and window frames.

110 Frame-attaching devices particularly adapted for securing wire-mattress fabric to bed frames.

SEE OR SEARCH CLASS:

5, Beds, subclass 211, and indented subclasses for permanent stretchers attached to the frame.

111 Miscellaneous devices and processes for joining or uniting wires not classifiable in the minor subclasses below.

SEE OR SEARCH CLASS:

29, Metal Working, subclass 282 for a means to join wires by crimping a sleeve around them, subclasses 432+ for a method including a step of driving a nail or staple into work and not elsewhere classified, subclass 461 for processes of joining wire cables which include a step of spreading the strands of the cables to provide larger surface contact, and subclasses 517+ for processes of joining wires together by deforming a hollow sleeve around them.

56, Harvesters, subclass 432 for means mounted on a harvester and operatively connected therewith for forming compact bundles of stalks and binding them as the harvester travels through the field, particularly subclasses 451+ wherein the bundle is encircled by wire or the like, and the ends of the wire twisted together, and subclasses 464+ for such devices wherein a cord binder is used the ends of which are clamped together by a clip.

156, Adhesive Bonding and Miscellaneous Chemical Manufacture, subclass 49 for processes for splicing indefinite length electrical conductors not elsewhere provided for.

164, Metal Founding, subclasses 91+ and particularly subclass 110 for processes of joining wire by metal casting operations.

228, Metal Fusion Bonding, appropriate subclasses for making a joint by soldering, brazing or welding.

289, Knots and Knot Tying, appropriate subclasses for devices for joining cords or strands wherein the portions of the parts joined are not held together by reasons wholly of the rigidity of the material.

403, Joints and Connections, appropriate subclasses for joints of general utility.

112 Joining wire by the process of electric welding, particularly in fabric-making.

SEE OR SEARCH CLASS:

219, Electric Heating, subclass 617 and 50+ for electric welding. Note particularly indented subclasses 51+, 56+, 605, and 636.

113 Machines for tying, splicing, or otherwise securing the ends of wires together or securing one wire to another.

SEE OR SEARCH THIS CLASS, SUBCLASS:

93.2, for apparatus for tensioning and joining a flexible binder in which the apparatus is supported manually or on the work.

SEE OR SEARCH CLASS:

56, Harvesters, subclass 131, and indented subclasses.

100, Presses, subclass 33 for apparatus not elsewhere classified for joining the ends of a binder in which the apparatus has a support for the material to be bound.

114 Machines for forming eyes in the ends of wires and interlocking the same in the process of

forming, consisting principally of devices for making check-row wire, but not limited thereto.

115 Wire-splicing machines having a revoluble head or jaw for twisting-or coiling.

SEE OR SEARCH THIS CLASS, SUBCLASS:
36, for twister-heads.

SEE OR SEARCH CLASS:
19, Textiles: Fiber Preparation, subclass 154 for twisting-heads.

116 Dies employed in machines for splicing or joining wires.

SEE OR SEARCH THIS CLASS, SUBCLASS:
11, 20 and 113, for the machines in which the dies are used.

117 Miscellaneous hand tools for splicing or securing wires together and not classifiable in the subclass defined below. Includes all implements for coiling or winding one wire about another.

SEE OR SEARCH THIS CLASS, SUBCLASS:
124, for implements employed in making a wire coil rather than in joining wires.

118 Implements for mutually twisting two wires together a twist being imparted to wire, so that they are intertwisted. Most of the implements of this subclass are employed in the manufacture of slatted wire fabrics.

SEE OR SEARCH THIS CLASS, SUBCLASS:
102.5, for implements employed in looping and twisting fence strands for the purpose of taking up slack and stretching them.
117, if the tool operates to coil or wind one wire about another which remains straight.

119 Wire-splicing implements having a rotary jaw or head for receiving the wires to be intertwisted.

SEE OR SEARCH THIS CLASS, SUBCLASS:
36, for twister-heads, per se.

SEE OR SEARCH CLASS:
19, Textiles: Fiber Preparation, subclass 154 for twisting-heads.

120 Wire-twisting tools having means for separating the wires to be twisted or spreading them apart adjacent to the point of twisting.

121 Wire-joining tools of the plier type, particularly adapted either for coiling or twisting wires together.

SEE OR SEARCH CLASS:
7, Compound Tools, subclasses 125+ for compound tools of the plier type.
81, Tools, subclasses 300+ for miscellaneous tools of plier type.
433, Dentistry, subclass 4 for orthodontic wireworking pliers.

122 Implements provided with a rotary coiler or winder for splicing wires together by winding or coiling one wire about another.

123 Miscellaneous hand tools specially adapted for working wire not classifiable in the other subclasses of implements in this class or which include other matter not classifiable in such classes.

SEE OR SEARCH CLASS:
7, Compound Tools, and 81, Tools for specific structural features.
81, Tools, particularly subclass 300 for tool-jaw(s) positioned by relatively movable plural handles (e.g., pliers).
433, Dentistry, subclasses 3+ for orthodontic implements for working with arch wire.

123.5 Wire-working implements including means for stretching the wire.

SEE OR SEARCH THIS CLASS, SUBCLASS:
102.5, and for fabric stretchers subclasses 108+.

SEE OR SEARCH CLASS:
254, Implements or Apparatus for Applying Pushing of Pulling Force, subclasses 199+ for portable imlements or apparatus for tensioning flexible material (e.g., wire fence fabric, fence wires) from which the implements or apparatus are detached after tensioning.

123.6 Wire-stretching implements, including means for severing the wire.

SEE OR SEARCH CLASS:
100, Presses, subclass 32 for apparatus, not provided for elsewhere, by which a binder encircling material is tensioned to increase its tightness about the material.

124 Hand tools for making wire coils, but not tools for coiling one wire about another.

SEE OR SEARCH THIS CLASS, SUBCLASS:
117+, for tools for coiling one wire about another.

SEE OR SEARCH CLASS:
72, Metal Deforming, appropriate subclasses for an apparatus for convoluting metal work.
242, Winding, Tensioning, or Guiding, subclass 439.3, 442, and 916 for hand tool for winding wire coils on a core of comparatively short length.

139 Devices that both straighten and cut wire.

SEE OR SEARCH CLASS:
153, Metal Binding, subclass 89 for devices which straighten and cut wire in which the straightening is by bending the metal back and forth and proceeding with such work continuously along the metal to treat each successive portion similarly.

140 Wire straightening and cutting devices having means to produce straight wires of given length, the cutting mechanism usually being actuated by the wire to be cut.

SEE OR SEARCH CLASS:
227, Elongated-Member-Driving Apparatus, appropriate subclasses for devices for applying nails, staples and clips by driving and/or clenching in combination with means to form the element to be applied including cutting predetermined lengths of wire.

147 Devices specially adapted for straightening wire.

SEE OR SEARCH CLASS:
72, Metal Deforming, and see (81) Note herein-above.

149 Miscellaneous wire-twisting devices not classifiable in other subclasses of this or other arts under appropriate titles.

(1) Search this class, particular groups under Article making or forming.

SEE OR SEARCH CLASS:
56, Harvesters, subclass 132, 133, 451+, and 458.
57, Textiles: Spinning, Twisting, and Twining, appropriate subclasses.
72, Metal Deforming, and see (81) and (83) Notes hereinabove.
493, Manufacturing Container or Tube From Paper; or Other Manufacturing From a Sheet or Web, subclasses 375+ for devices for applying wire to tags, usually involving feeding, cutting, twisting, or knotting devices.

150 **SEAL APPLYING OR BAND FASTENING:**
This subclass is indented under the class definition. Apparatus comprising a manually manipulatable or work supported apparatus for applying a tag or fastener to or otherwise securing the end portions of a flexible strand or band.

SEE OR SEARCH THIS CLASS, SUBCLASS:
100, Presses, subclass 30 for binder tightening and securing apparatus, not elsewhere provided for, and including means to secure the spaced portions of the binder by deforming a sleeve or a

U-shape clamp member, within which the said portions are received.

151 By device having magazine for seals or fastener:

This subclass is indented under subclass 150. Apparatus further including means to store a supply of the tags or fasteners and to dispense or present one of the tags or fastener upon demand.

152 By device having cutting edge:

This subclass is indented under subclass 150. Apparatus including a work contacting portion which penetrates the work to separate one portion from another.

153 By device having single throw lever:

This subclass is indented under subclass 150. Apparatus including a force multiplying actuator bar comprising an elongated pivoted bar adapted to be moved about a pivot by hand whereby a single sweep of the bar causes the apparatus to apply the tag or fastener, or otherwise secure the end portions of the strand or band.

154 Including pivoted force multiplier between die and lever:

This subclass is indented under subclass 153. Apparatus including a second bar or link pivotally connected to a work contacting portion and to the actuator bar to further increase the force applied by hand through the actuator bar.

END